

**Text of Presentation by Deborah A.P. Hersman
Member, National Transportation Safety Board
at the
NHTSA Public Meeting: Seat Belts on School
Buses
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Slide 1: (Title)

Slide 2: NTSB's Role in Highway Safety

The NTSB is an independent Federal agency charged by Congress to investigate accidents in all modes of transportation. In our investigations, we determine the probable cause and issue recommendations to other government agencies, industry, and advocacy groups to improve safety and help prevent a recurrence of that type of accident. In highway accidents, the NTSB conducts comprehensive investigations in which we seek out, and usually find, root causes that may not be readily apparent from the more cursory investigations conducted by state and local law enforcement agencies.

In selecting highway accidents to investigate, we look for issues with national significance that other highway safety organizations have not addressed. The NTSB has no regulatory authority, so we cannot implement a change directly, although we can be the catalyst for safety improvements.

Slide 3: School Bus Safety

The NTSB investigates some of the most dramatic and, usually fatal, school bus accidents. They typically involve severe rollovers or side impacts with other large vehicles, trains, or fixed objects.

Slide 4: (Studies)

In 2 comprehensive reviews of school bus crashworthiness, one in 1987 and another in 1999, the NTSB found that school bus passengers who remain within the compartment are less likely to be injured.

Slide 5: Crashworthiness Findings

However, compartmentalization does not always protect passengers in rollovers or in lateral impacts with vehicles of large mass. During these types of accidents, passengers may be ejected or come in contact with other passengers, the sidewalls, the windows, or the edges of adjacent seats -- all surfaces that are not designed to absorb impact energy. However, given the available data, the Board cannot determine whether the current designs of available restraint systems for large school buses would necessarily reduce the risk of injury.

Slide 6: Monticello, MN (accident scenario video)

In 1997, the NTSB investigated an accident near Monticello, Minnesota in which a tractor-trailer going about 49 mph struck the side of a school bus going about 45 mph at an intersection.

Slide 7: Monticello, MN (animation)

The bus was occupied by a lap-belted driver and 13 passengers, ages 6 to 11. Watch closely the lateral movement of the school bus as it side-slaps the side of the tractor-trailer in a secondary impact.

The truck driver and 3 school bus passengers seated in the left rear of the bus were fatally injured. Additionally, the school bus driver and 10 passengers sustained injuries.

Slide 8: Monticello, MN (animation)

This simulation displays the lap/shoulder belted occupant kinematics for the 6 occupants located in the last 3 rows of the school bus. (Remember the side-slap).

Slide 9: Monticello, MN

Head injuries were predicted for 5 of the simulated occupants in each of the 3 restraint conditions: unrestrained, lap belt restrained, and lap/shoulder belt restrained. The yellow X indicates the occupant predicted to sustain a head injury.

This accident illustrates the complex nature of occupant protection.

Slide 10: Holmdel, NJ

In this accident, a 54-passenger school bus collided with a dump truck at an intersection in Holmdel, New Jersey. The bus was occupied by an unrestrained driver and 6 passengers, ages 7 to 16. The school bus was going about 21 mph and the fully loaded dump truck was traveling at about 39 mph at impact.

The front of the truck contacted the left side of the school bus at the left front tire. Watch for the secondary impact between the left side of the bus and the right side of the truck.

Slide 11: Holmdel, NJ (animation)

The bus driver and all 6 passengers sustained injuries. The passenger seats in the school bus were not equipped with seat belts.

Slide 12: Holmdel, NJ (animation)

This simulation shows the occupant kinematics for the 4 occupants located in the first 2 rows of the bus had they been wearing lap/shoulder belts.

Slide 13: Holmdel, NJ

This slide illustrates the predicted head injuries in the simulation for each of the 3 restraint conditions. The yellow X indicates the occupant predicted to sustain a head injury.

Slide 14: Crashworthiness Recommendations to NHTSA

In 1999, the Board asked NHTSA to:

- Develop occupant protection performance standards specific to large school buses, addressing frontal impacts, side impacts, rear impacts, and rollovers, and
- Ensure that all new occupant protection systems on large school buses meet this minimum level of protection.

Slide 15: School Bus Crashworthiness Added to Most Wanted List

Last November, the Safety Board elevated this issue to our Most Wanted List of Safety Improvements.

Slide 16: Summary

In summary, the board acknowledges the difficulties in developing a system that will protect children of all ages in most crash scenarios on school buses. However, since we continue to see crashes where children are fatally injured, we will continue to push for improvements.

Thank you for your attention and dedication to highway safety.